

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave. St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-007235**Date Inspected:** 26-May-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG Fabrication**Summary of Items Observed:**

CWI Inspector: Mr. Liu Fu Wen

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following:

Prior to Caltrans QA Inspectors' concurring with issuance of OBG deck plate closed rib green tag releases a review of the ultrasonic inspection database is performed to verify all closed rib tack weld repair locations have been ultrasonically accepted. Today this QA Inspector, Mr. Paul Dawson, performed data entry of ultrasonic inspection information from the field generated Ultrasonic inspection data sheets onto the common drive computer database for the following OBG deck panels: DP419-001, DP537-001, DP338-001, DP257-001, DP153-001 and DP473-001.

OBG Bay 14

The QA Inspector observed ZPMC welder Ms. Gao Min, stencil 050988 is using welding procedure specification WPS-B-T-2231-B-U2 to make flux cored groove weld SEG60A-003 between side plate SP377A and SP350A. The QA Inspector observed ZPMC Quality Control personnel had monitoring this welding and the QA Inspector measured a welding current of approximately 316 amps and 31.3 volts. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this date appeared to generally

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comply with applicable contract documents.

The QA Inspector observed ZPMC welder Mr Wu Wan Yong, stencil 050242 is using welding procedure specification WPS-B-T-2232-TC-U4G/F to make flux cored groove weld SSD20A on longitudinal diaphragm 12A.

The QA Inspector observed ZPMC Quality Control personnel had monitoring this welding and the QA Inspector measured a welding current of approximately 300 amps and 28.3 volts. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Mr. Cao Xing Longi, stencil 069683 is using the shielded metal arc welding process to deposit shielded metal arc weld SEG038-001 in the overhead position. The QA Inspector asked CWI Mr. Liu Fu Wen what welding procedure was being used. Mr. Wen went out of the OBG segment and walked to where ZPMC has posted many of the welding procedure specifications on one of the tower bay 14 walls and after he looked at several of the welding procedure specifications, he informed the QA Inspector that welding procedure specification WPS-345-SMAW-4G(4F)-Repair was being used. The QA Inspector measured a welding current of approximately 170 amps and the welding electrodes are being stored in a heated container. Items observed by this QA Inspector appear to be progressing in compliance with applicable contract documents.

The QA Inspector observed ZPMC welder Ms. Wang Lan Ying, stencil 045265 appears to have been using welding procedure specification WPS-B-T-2221-L2c-S-2 to make submerged arc groove weld SE053A-006 between baseplates BP045 and BP153. The QA Inspector observed ZPMC Quality Control personnel had recorded a welding current of 461 amps, 31.4 volts and a welding travel speed of 587 mm per minute. Items observed by this QA Inspector appear to be progressing in compliance with applicable contract documents.

The QA Inspector observed ZPMC welder Mr. Zang Yanbo, stencil 045196 is using the shielded metal arc welding process to deposit a shielded metal arc weld in the overhead position at location 6AW near DP084. The QA Inspector observed Mr. Yanbo appears to be welding on a surface that has had metal removed with the air carbon arc gouging process and that the surface that has been welded has not been ground to a bright metal condition. The QA Inspector informed ZPMC CWI Mr. Liu Fu Wen that this welding is being performed on an oxidized surface and Mr. Liu Fu Wen said he had seen Mr. Zang Yanbo welding on this type of surface that he would have immediately stopped the welding until the surface had been properly ground. Mr. Liu Fu Wen informed this QA Inspector that after the carbon arc gouging surface is ground he will personally inspect this area and mark on the adjacent steel that this surface is visually acceptable to allow welding repairs. Items observed by this QA Inspector do not fully appear to be progressing in compliance with applicable contract documents.

### OBG Assembly Yard

The QA Inspector observed ZPMC personnel are performing 'free hand thermal cutting' on OBG segment 5AW and 5BW stiffeners without use of a mechanical guide. Access to the areas being cut does not appear to be restricted due to cross sectional geometry and or position in so far as mechanical guides could not be used. AWS D1.5 2002 section 3.2.3 states "Steel and weld metal may be thermally cut, provided a smooth and regular surface free from cracks and notches is secured, and provided that an accurate profile is secured by the use of a mechanical guide. Freehand thermal cutting shall be done only where approved by the Engineer." This QA Inspector issued an Incident Report to document this Code violation. See photos for additional information.

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## Summary of Conversations:

See above.

## Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

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**Inspected By:** Dawson,Paul

Quality Assurance Inspector

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**Reviewed By:** Clifford,William

QA Reviewer